# SECTION 9.3

# WILDFIRES

*(Updated Methodology January 27, 1994)*

**EMISSION INVENTORY SOURCE CATEGORY**
Natural (Non-Anthropogenic) Sources / Wildfires

**EMISSION INVENTORY CODES (CES CODES) AND DESCRIPTION**
**930-930-0200-0000 (47308)** Wildfire - Grass and Woodland

**930-932-0200-0000 (47316)** Wildfires - Timber and Brush

## METHODS AND SOURCES

Emissions reported in these categories result from wildfires in grass, woodland, timber and brush. EIC 930-930-0200-0000 covers grass, woodland, agricultural products and non-forest fires. EIC 930-932-0200-0000 covers brush, timber, non-commercial timber and commercial timber fires.

Wildfire protection in California is provided by the California Department of Forestry (CDF), the United States Forest Service (USFS), and local agencies. The CDF and USFS each report annually the acreage burned in wildfires on the protected lands. Local agencies do not keep data on wildfires in their jurisdictions. However, based on the 1986 CDF map,[1] ARB determined that most of the locally protected land is in the Central Valley, the Southeast Desert, and metropolitan areas where wildfires are less prevalent. The CDF report [2] divides the number of acres burned in each county into five categories: timber, woodland, grass, brush and agricultural products. For purposes of estimating emissions, agricultural products are assumed to be grasses. The acres burned reported by CDF were divided between air basins according to the portion of CDF-protected forest in each air basin, as determined by ARB staff using the CDF map. The percentages used to apportion CDF acreage to different air basins are shown below.

| County | % Air Basin | % Air Basin | % Air Basin |
|---|---|---|---|
| El Dorado | LT - 0 | MC - 100 | |
| Kern | SED - 0 | SJV - 100 | |
| Los Angeles | SC - 100 | SED - 0 | |
| Placer | LT - 0 | MC - 45 | SV - 55 |
| Riverside | SC - 23 | SED - 77 | |
| Shasta | SV - 100 | | |
| Solano | SF - 45 | SV - 55 | |
| Sonoma | NC - 64 | SF - 36 | |

The USFS report[3] provides the number of acres burned in each national forest. For 1991 all fires from the following national forests: Angeles, Cleveland, Mendocino, Los Padres, Sequoia and San Bernardino are assumed to be brush fires. All fires from the rest of the natural forests in California are assumed to be timber fires.[4] The acreage burned in each national forest was allocated to the counties according to the percentage of the national forest area in each county/air basin determined by the National Forest Areas Report provided by the USFS.[5]

The CDF estimates fuel loading to be 2 tons/acre for grass and woodland and 15 tons/acre for timber and brush. These factors represent the amount of material expected to burn per acre, not necessarily the total vegetation per acre. Mature trees are not expected to be totally consumed in a fire, while small brush is, especially manzanita with its high oil content. In woodland areas, it is assumed that grass and fallen logs are the only materials burned. To determine emissions factors in lbs/acre, AP-42 [6] emission factors in lb/ton for grass and woodland and Geomet [8] emission factors for timber and brush in lb/ton are converted using the fuel loading factors.

Emission Factors For Wildfires

| | Grass & Woodland 2 tons/acre | | Timber & Brush 15 tons/acre | |
|---|---|---|---|---|
| | (lb/ton) | (lb/acre) | (lb/ton) | (lb/acre) |
| CO | 101 | 202 | 260 | 3900 |
| NOX | 0 | 0 | 4 | 60 |
| TOG | 19 | 38 | 25 | 375 |
| TSP | 16 | 32 | 42 | 630 |

## TEMPORAL INFORMATION

The annual activity is greatest from late spring to late fall. The weekly and daily activities are to be assumed nearly uniform.

## ASSUMPTIONS

1. All acres burned in wildfires are reported by CDF or USFS, and there is no double counting.

2. Wildfires in areas under local jurisdictions are negligible and therefore not included in the emission estimates.

3. The fuel loading factors provided by CDF accurately represent the average loadings.

4. USFS data on acres burned can be divided into county/air basin based on percentage of national forest within each county/air basin determined from a 1986 CDF map and information from USFS. Likewise, CDF data can be divided into air basins based on percentage of CDF-protected forest determined from the same 1986 CDF map.

5. Wildfires occur predominately during relatively dry seasons, that is, from late spring to late fall.

## RELIABILITY FACTOR

Not determined at this time.

## CHANGES IN METHODOLOGY

No change in methodology

## DIFFERENCES BETWEEN 1989 AND 1991 EMISSION ESTIMATES

The differences between the 1989 and 1991 estimates are due to the difference in wildfire size and location.

## RECOMMENDATIONS

New emission factor data for prescribed fires and wildfires have been developed by the Fire and Environmental Research Applications Group. This data has been sent to EPA (Research Triangle Park) to be used in updating AP-42. These new emission factors represent the best available monitoring techniques used during actual wildfires.[7] The GIS modeling confirms the accuracy of the new emission factors and it is recommended that ARB uses these new numbers for Grass and Woodland emissions. It is also recommended that further data be incorporated representing the actual type of timber in the National Forests in California (i.e. douglas fir,

hardwoods, ponderosa or mixed conifer). This could improve the fuel loading factors which would increase the accuracy of the Timber and Brush category.

Geomet [8] gives the following range in emission factors in lb/ton for forest fires: CO, 20-500; NOx, 2-6; TOG, 10-40; TSP, 17-67. The average of the high and low values were used to calculate emissions for timber and brush.

Although the emission factors used in this estimate are based on tests performed under laboratory or simulated conditions, at this time, it is best to be consistent in using the same emission factors used in the previous methodology for the 1991 revision and use the new AP-42 methodology when it is released by the EPA.

## SAMPLE CALCULATIONS

For example, to calculate the emissions from wildfires in San Diego County, begin with the number of acres reported by CDF as shown below:

1) Acres reported burned by CDF for San Diego County:

| | Woodland | Grass | Agricultural | Timber | Brush |
|---|---|---|---|---|---|
| Acreage: | 25 | 763 | 4 | 1 | 1440 |

2) Then calculate the emissions from the Cleveland National Forest using the percentage of the forest within San Diego Co. and the number of acres burned in the Cleveland Forest (Table 1 provides data).

| National Forest | % of Forest in San Diego Co. | | Acres Burned in Forest | = | Acres Burned in San Diego Co. |
|---|---|---|---|---|---|
| Cleveland | 68 % | x | 39.0 | = | 26.52 acres |

3) Add both San Diego Co. CDF acres and the Cleveland Nat. Forest acres.

For EIC 930-930-0200-0000 (CES 47308) Grass and Woodland, including Agriculture

Total Acres Burned 763 + 25 + 4 = 792 acres

For EIC 930-932-0200-0000 (CES 47316) Brush and Timber*

Total Acres Burned = 1440 + 1 + 26.52 = 1467.5 acres
( CDF + USFS = total acres in San Diego)

* USFS has assumed that all USFS fires are either brush or timber fueled fires and should be counted under EIC 930-932-0200-0000 (CES 47316)

EMISSIONS = (Total Acres Burned) x (Emission Factor) / 2000 lb/ton

| Type | Acres Burned | Emission Factor (lb/Acre) | | | | Emissions (tons/year) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | CO | NOX | TOG | PM | CO | NOX | TOG | PM |
| ***Grass and Woodland*** | 792 | 202 | 0 | 38 | 32 | 79.9 | 0 | 15.0 | 12.7 |
| ***Timber/Brush*** | 1467.5 | 3900 | 60 | 375 | 630 | 2830.1 | 44.1 | 275.1 | 462.2 |

Table - I

Fires Reported in National Forests in California
Apportioned by County

| National Forest | Total Acres Burned in Forest | % of Forest In each County** | Acres Burned in ea. Co. |
|---|---|---|---|
| Angeles | 336 | 100% in Los Angeles | 336.0 |
| Cleveland | 39 | 68% in San Diego | 26.52 |
| | | 13% in Orange | 5.07 |
| | | 19% in Riverside | 7.41 |
| El Dorado | 221 | 73% in El Dorado | 161.33 |
| | | 12% in Amador | 26.52 |
| | | 8% in Alpine | 17.68 |
| | | 7% in Placer | 15.47 |
| Inyo | 58 | 44% in Mono | 25.52 |
| | | 43% in Inyo | 24.94 |
| | | 10% in Tulare | 5.8 |
| | | 3% in Madera | 1.74 |
| Klamath | 467 | 100% in Siskiyou | 467.0 |
| Lake Tahoe Basin | 7 | 100% in El Dorado | 7.0 |
| Lassen | 26 | 40% in Lassen | 10.4 |
| | | 23% in Shasta | 5.98 |
| | | 18% in Tehama | 4.68 |
| | | 14% in Plumas | 3.64 |
| | | 5% in Butte | 1.34 |
| Los Padres | 1990 | 36% in Santa Barbara | 716.4 |
| | | 30% in Ventura | 597.0 |
| | | 18% in Monterey | 358.2 |
| | | 11% in San Luis Obispo | 218.9 |
| | | 4% in Kern (SJV) | 79.6 |
| | | 1% in Los Angeles | 19.9 |

** Data from the National Forest Areas Report

Table - I (Continued)

Fires Reported in National Forests in California
Apportioned by County

| National Forest | Total Acres Burned in Forest | % of Forest In each County** | Acres Burned in ea. Co. |
|---|---|---|---|
| Mendocino | 526 | 29% in Lake | 152.5 |
| | | 21% in Glenn | 110.5 |
| | | 20% in Mendocino | 105.2 |
| | | 14% in Tehama | 73.6 |
| | | 9% in Trinity | 47.3 |
| | | 7% in Colusa | 36.8 |
| Modoc | 418 | 83% in Modoc | 346.9 |
| | | 9% in Lassen | 37.6 |
| | | 8% in Siskiyou | 33.4 |
| Plumas | 363 | 75% in Plumas | 272.25 |
| | | 20% in Sierra | 72.6 |
| | | 5% in Butte | 18.15 |
| Rouge River | -0- | 100% in Siskiyou | -0- |
| San Bernardino | 2334 | 70% in San Bernardino | 1633.8 |
| | | 30% in Riverside | 700.2 |
| Sequoia | 220 | 62% in Tulare | 136.4 |
| | | 26% in Kern | 57.2 |
| | | 12% in Fresno | 26.4 |
| Shasta-Trinity | 2765 | 53% in Trinity | 1465.45 |
| | | 23% in Shasta | 635.95 |
| | | 21% in Siskiyou | 580.65 |
| | | 3% in Tehama | 82.95 |
| Sierra | 75 | 66% in Fresno | 49.5 |
| | | 27% in Madera | 20.25 |
| | | 7% in Mariposa | 5.25 |
| Siskiyou | -0- | 100% in Del Norte | -0- |

** Data from the National Forest Areas Report

Table - I (Continued)

Fires Reported in National Forests in California
Apportioned by County

| National Forest | Total Acres Burned in Forest | % of Forest In each County** | Acres Burned in ea. Co. |
|---|---|---|---|
| Six Rivers | 114 | 42% in Del Norte | 47.88 |
| | | 34% in Humboldt | 38.76 |
| | | 23% in Trinity | 26.22 |
| | | 1% in Siskiyou | 1.14 |
| Stanislaus | 151 | 68% in Tuolumne | 102.68 |
| | | 13% in Alpine | 19.63 |
| | | 9% in Mariposa | 13.59 |
| | | 9% in Calaveras | 13.59 |
| Tahoe | 29 | 43% in Placer | 12.47 |
| | | 33% in Sierra | 9.57 |
| | | 20% in Nevada | 5.8 |
| | | 2% in Sierra | 0.58 |
| | | 1% in El Dorado | 0.00 |

** Data from the National Forest Areas Report

## ADDITIONAL CODES

SOURCE CATEGORY GROWTH AND CONTROL CODES

47308 Growth = 921 Control = 902

47316 Growth = 922 Control = 902

SOURCE CATEGORY CODE POLLUTANT SPECIATION PROFILES

VOC Speciation Profile Code: 307

Particulate Speciation Profile Code: 307

SOURCE CATEGORY CODE REACTIVITY FACTORS

Not Available

## REFERENCES


1. California Department of Forestry, Map: California Department of Forestry Facilities, North Half and South Half, (1986).

2. California Department of Forestry, 1991 Emergency Activity Report, Protection Responsibility Acres Damaged by Vegetation Fire Type by County, (April 14, 1993), p. 1-4.

3. U.S. Department of Agriculture, Forest Service, National Forest Fires Annual Fire Report 1991.

4. Harrel, Richard D., Fuels Management Specialist, USFS, Placerville, CA Personal Communication.

5. U.S. Department of Agriculture, Forest Service, National Forest Areas Report, as of September 30, 1987. Net Area of National Forest and Other Lands Administered by the Forest Service Listed by State, Congressional Districts and Counties.

6. U.S. Environmental Protection Agency, Compilation of Air Pollution Emission Factors, AP-42, Table 2.4-2 (December 1977) and Table 11.1-2 (January 1975).

7. Hardy, Collin, U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Research Station, Personal Communication, (Sept. 1993).

8. Geomet, Inc., Impact of Forestry Burning Upon Air Quality, NTIS PB-290472, (October 1978) p. 102.


## PREPARED BY


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Table II
1991 Area Source Emissions
Activity: Unspecified Activities
Process: Wild Fires
Entrainment: Solid Material Combustion
Dimn: Grass & Woodland
CES: 47308
Process Rate Unit: Acres

| AB | County | Process Rate | TOG Emis. (Tons / Year) | CO Emis. (Tons / Year) | NOX Emis. (Tons / Year) | SOX Emis. (Tons / Year) | PM Emis. (Tons / Year) |
|---|---|---|---|---|---|---|---|
| GBV | ALPINE | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | INYO | 7 | 0.13 | 0.71 | 0.00 | 0.00 | 0.11 |
| | MONO | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| LC | LAKE | 353 | 6.71 | 35.65 | 0.00 | 0.00 | 5.65 |
| LT | EL DORADO | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | PLACER | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| MC | AMADOR | 467 | 8.87 | 47.17 | 0.00 | 0.00 | 7.47 |
| | CALAVERAS | 231 | 4.39 | 23.33 | 0.00 | 0.00 | 3.70 |
| | EL DORADO | 780 | 14.82 | 78.78 | 0.00 | 0.00 | 12.48 |
| | MARIPOSA | 24 | 0.46 | 2.42 | 0.00 | 0.00 | 0.38 |
| | NEVADA | 234 | 4.45 | 23.63 | 0.00 | 0.00 | 3.74 |
| | PLACER | 234 | 4.45 | 23.63 | 0.00 | 0.00 | 3.74 |
| | PLUMAS | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | SIERRA | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | TUOLUMNE | 62 | 1.18 | 6.26 | 0.00 | 0.00 | 0.99 |
| NC | DEL NORTE | 5 | 0.10 | 0.51 | 0.00 | 0.00 | 0.08 |
| | HUMBOLDT | 347 | 6.59 | 35.05 | 0.00 | 0.00 | 5.55 |
| | MENDOCINO | 567 | 10.77 | 57.27 | 0.00 | 0.00 | 9.07 |
| | SONOMA | 983 | 18.68 | 99.28 | 0.00 | 0.00 | 15.73 |
| | TRINITY | 3 | 0.06 | 0.30 | 0.00 | 0.00 | 0.05 |
| NCC | MONTEREY | 104 | 1.98 | 10.50 | 0.00 | 0.00 | 1.66 |
| | SAN BENITO | 12 | 0.23 | 1.21 | 0.00 | 0.00 | 0.19 |
| | SANTA CRUZ | 20 | 0.38 | 2.02 | 0.00 | 0.00 | 0.32 |
| NEP | LASSEN | 51 | 0.97 | 5.15 | 0.00 | 0.00 | 0.82 |
| | MODOC | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | SISKIYOU | 136 | 2.58 | 13.74 | 0.00 | 0.00 | 2.18 |
| SC | LOS ANGELES | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | ORANGE | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | RIVERSIDE | 365 | 6.94 | 36.87 | 0.00 | 0.00 | 5.84 |
| | SAN BERNARDINO | 28 | 0.53 | 2.83 | 0.00 | 0.00 | 0.45 |
| SCC | SAN LUIS OBISPO | 106 | 2.01 | 10.71 | 0.00 | 0.00 | 1.70 |
| | SANTA BARBARA | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | VENTURA | 146 | 2.77 | 14.70 | 0.00 | 0.00 | 2.34 |
| SD | SAN DIEGO | 792 | 15.05 | 79.99 | 0.00 | 0.00 | 12.67 |
| SED | IMPERIAL | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | KERN | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | LOS ANGELES | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | RIVERSIDE | 172 | 3.27 | 17.37 | 0.00 | 0.00 | 2.75 |
| | SAN BERNARDINO | 88 | 1.67 | 8.89 | 0.00 | 0.00 | 1.41 |
| SF | ALAMEDA | 317 | 6.02 | 32.02 | 0.00 | 0.00 | 5.07 |
| | CONTRA COSTA | 272 | 5.17 | 27.47 | 0.00 | 0.00 | 4.35 |
| | MARIN | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | NAPA | 54 | 1.03 | 5.45 | 0.00 | 0.00 | 0.86 |
| | SAN FRANCISCO | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | SAN MATEO | 757 | 14.38 | 76.46 | 0.00 | 0.00 | 12.11 |
| | SANTA CLARA | 430 | 8.17 | 43.43 | 0.00 | 0.00 | 6.88 |
| | SOLANO | 110 | 2.09 | 11.11 | 0.00 | 0.00 | 1.76 |
| | SONOMA | 1538 | 29.22 | 155.34 | 0.00 | 0.00 | 24.61 |
| SJV | FRESNO | 99 | 1.88 | 10.00 | 0.00 | 0.00 | 1.58 |
| | KERN | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | KINGS | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | MADERA | 759 | 14.42 | 76.66 | 0.00 | 0.00 | 12.14 |
| | MERCED | 292 | 5.55 | 29.49 | 0.00 | 0.00 | 4.67 |
| | SAN JOAQUIN | 232 | 4.41 | 23.43 | 0.00 | 0.00 | 3.71 |
| | STANISLAUS | 129 | 2.45 | 13.03 | 0.00 | 0.00 | 2.06 |
| | TULARE | 47 | 0.89 | 4.75 | 0.00 | 0.00 | 0.75 |
| SV | BUTTE | 193 | 3.67 | 19.49 | 0.00 | 0.00 | 3.09 |
| | COLUSA | 59 | 1.12 | 5.96 | 0.00 | 0.00 | 0.94 |
| | GLENN | 838 | 15.92 | 84.64 | 0.00 | 0.00 | 13.41 |
| | PLACER | 287 | 5.45 | 28.99 | 0.00 | 0.00 | 4.59 |
| | SACRAMENTO | 4 | 0.08 | 0.40 | 0.00 | 0.00 | 0.06 |
| | SHASTA | 287 | 5.45 | 28.99 | 0.00 | 0.00 | 4.59 |
| | SOLANO | 90 | 1.71 | 9.09 | 0.00 | 0.00 | 1.44 |
| | SUTTER | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | TEHAMA | 227 | 4.31 | 22.93 | 0.00 | 0.00 | 3.63 |
| | YOLO | 1073 | 20.39 | 108.37 | 0.00 | 0.00 | 17.17 |
| | YUBA | 200 | 3.80 | 20.20 | 0.00 | 0.00 | 3.20 |
| TOTAL | | 14611 | 277.62 | 1475.67 | 0.00 | 0.00 | 233.74 |

Fraction of Reactive Organic Gases (FROG): .7218
(Reactive Organic Gases (ROG) Emissions = TOG X FROG)
Fraction of PM10 (FRPM10): .8800
(PM10 Emissions = PM X FRPM10)

Table III
1991 Area Source Emissions
Activity: Unspecified Activities
Process: Wild Fires
Entrainment: Solid Material Combustion
Dimn: Timber & Brush
CES: 47316
Process Rate Unit: Acres

| AB | County | Process Rate | TOG Emis. (Tons / Year) | CO Emis. (Tons / Year) | NOX Emis. (Tons / Year) | SOX Emis. (Tons / Year) | PM Emis. (Tons / Year) |
|---|---|---|---|---|---|---|---|
| GBV | ALPINE | 55 | 10.31 | 107.25 | 1.65 | 0.00 | 17.33 |
| | INYO | 40 | 7.50 | 78.00 | 1.20 | 0.00 | 12.60 |
| | MONO | 57 | 10.69 | 111.15 | 1.71 | 0.00 | 17.96 |
| LC | LAKE | 485 | 90.94 | 945.75 | 14.55 | 0.00 | 152.78 |
| LT | EL DORADO | 33 | 6.19 | 64.35 | 0.99 | 0.00 | 10.40 |
| | PLACER | 4 | 0.75 | 7.80 | 0.12 | 0.00 | 1.26 |
| MC | AMADOR | 93 | 17.44 | 181.35 | 2.79 | 0.00 | 29.29 |
| | CALAVERAS | 60 | 11.25 | 117.00 | 1.80 | 0.00 | 18.90 |
| | EL DORADO | 310 | 58.13 | 604.50 | 9.30 | 0.00 | 97.65 |
| | MARIPOSA | 171 | 32.06 | 333.45 | 5.13 | 0.00 | 53.87 |
| | NEVADA | 34 | 6.38 | 66.30 | 1.02 | 0.00 | 10.71 |
| | PLACER | 13 | 6.38 | 66.30 | 1.02 | 0.00 | 10.71 |
| | PLUMAS | 290 | 54.38 | 565.50 | 8.70 | 0.00 | 91.35 |
| | SIERRA | 27 | 5.06 | 52.65 | 0.81 | 0.00 | 8.51 |
| | TUOLUMNE | 114 | 21.38 | 222.30 | 3.42 | 0.00 | 35.91 |
| NC | DEL NORTE | 118 | 22.13 | 230.10 | 3.54 | 0.00 | 37.17 |
| | HUMBOLDT | 137 | 25.69 | 267.15 | 4.11 | 0.00 | 43.16 |
| | MENDOCINO | 154 | 28.88 | 300.30 | 4.62 | 0.00 | 48.51 |
| | SONOMA | 2327 | 436.30 | 4537.60 | 69.80 | 0.00 | 733.00 |
| | TRINITY | 1543 | 289.30 | 3008.79 | 46.28 | 0.00 | 486.03 |
| NCC | MONTEREY | 347 | 65.60 | 676.65 | 10.41 | 0.00 | 109.31 |
| | SAN BENITO | 53 | 9.94 | 103.35 | 1.59 | 0.00 | 16.70 |
| | SANTA CRUZ | 35 | 6.56 | 68.25 | 1.05 | 0.00 | 11.03 |
| NEP | LASSEN | 77 | 14.47 | 150.50 | 2.31 | 0.00 | 24.31 |
| | MODOC | 716 | 134.25 | 1396.20 | 21.48 | 0.00 | 225.54 |
| | SISKIYOU | 1149 | 215.43 | 2240.55 | 34.47 | 0.00 | 361.93 |
| SC | LOS ANGELES | 272 | 51.00 | 530.40 | 8.16 | 0.00 | 85.68 |
| | ORANGE | 4 | 0.75 | 7.80 | 0.12 | 0.00 | 1.26 |
| | RIVERSIDE | 416 | 77.96 | 810.84 | 12.47 | 0.00 | 130.98 |
| | SAN BERNARDINO | 1634 | 306.33 | 3185.91 | 49.01 | 0.00 | 514.64 |
| SCC | SAN LUIS OBISPO | 362 | 67.88 | 705.90 | 10.86 | 0.00 | 114.03 |
| | SANTA BARBARA | 697 | 130.69 | 1359.15 | 20.91 | 0.00 | 219.56 |
| | VENTURA | 597 | 111.90 | 1164.10 | 17.90 | 0.00 | 188.00 |
| SD | SAN DIEGO | 1471 | 275.81 | 2868.45 | 44.13 | 0.00 | 463.37 |
| SED | IMPERIAL | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | KERN | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | LOS ANGELES | 64 | 12.00 | 124.80 | 1.92 | 0.00 | 20.16 |
| | RIVERSIDE | 1392 | 261.02 | 2714.63 | 41.76 | 0.00 | 438.51 |
| | SAN BERNARDINO | 397 | 74.52 | 775.00 | 11.92 | 0.00 | 125.19 |
| SF | ALAMEDA | 6 | 1.13 | 11.70 | 0.18 | 0.00 | 1.89 |
| | CONTRA COSTA | 29 | 5.44 | 451.70 | 0.87 | 0.00 | 73.00 |
| | MARIN | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | NAPA | 8 | 1.50 | 15.60 | 0.24 | 0.00 | 2.52 |
| | SAN MATEO | 1 | 0.19 | 1.95 | 0.03 | 0.00 | 0.32 |
| | SANTA CLARA | 31 | 5.81 | 60.45 | 0.93 | 0.00 | 9.77 |
| | SONOMA | 1606 | 301.25 | 3131.50 | 48.17 | 0.00 | 505.85 |
| SJV | FRESNO | 81 | 15.19 | 157.95 | 2.43 | 0.00 | 25.52 |
| | KERN | 130 | 24.38 | 253.50 | 3.90 | 0.00 | 40.95 |
| | KINGS | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | MADERA | 35 | 6.56 | 68.25 | 1.05 | 0.00 | 11.03 |
| | MERCED | 5 | 0.93 | 9.75 | 0.15 | 0.00 | 1.57 |
| | SAN JOAQUIN | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | STANISLAUS | 61 | 11.44 | 118.95 | 1.83 | 0.00 | 19.22 |
| | TULARE | 153 | 28.76 | 299.13 | 4.60 | 0.00 | 48.32 |
| SV | BUTTE | 105 | 19.69 | 204.75 | 3.15 | 0.00 | 33.08 |
| | COLUSA | 42 | 7.88 | 81.90 | 1.26 | 0.00 | 13.23 |
| | GLENN | 101 | 18.94 | 196.95 | 3.03 | 0.00 | 31.82 |
| | PLACER | 3 | 0.56 | 5.85 | 0.09 | 0.00 | 0.95 |
| | SACRAMENTO | 00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | SHASTA | 1199 | 224.81 | 2338.05 | 35.97 | 0.00 | 377.69 |
| | SOLANO | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | SUTTER | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | TEHAMA | 195 | 36.56 | 380.25 | 5.85 | 0.00 | 61.43 |
| | YOLO | 138 | 25.88 | 269.10 | 4.14 | 0.00 | 43.47 |
| | YUBA | 31 | 5.81 | 60.45 | 0.93 | 0.00 | 9.77 |
| TOTAL | | 19708 | 3699.96 | 38867.80 | 591.83 | 0.00 | 6278.70 |

Fraction of Reactive Organic Gases (FROG): .7218
(Reactive Organic Gases (ROG) Emissions = TOG X FROG)
Fraction of PM10 (FRPM10): .8800
(PM10 Emissions = PM X FRPM10)